



OFCOM

LLU and WLR Charge Control

TalkTalk Group submission regarding single jumpering

Non-confidential version

January 2012

INTRODUCTION

- 1 This is TalkTalk Group's ("TTG") submission regarding single jumpering in particular in response to the paper from Openreach (dated Sept 2011) regarding single jumpering that Ofcom provided on 12 December 2010. The submission is laid out as follows:
 - The first section describes whether single jumpering is more efficient based on the potential costs and benefits under different approaches to single jumpering
 - The second section examines what costs should be recoverable under a charge control and on this basis what cost adjustment should be made for single jumpering
 - In the last section we address some other issues
- 2 This response focuses on single jumpering MPF (SJ-MPF) (with an inline TAM) and not TAM-less MPF. This is both because SJ-MPF is more important and also due to lack of time. We will provide comments on TAMless MPF as well as certain other issues in the next few days

ASSESSING THE COSTS AND BENEFITS OF SINGLE JUMPERING

- 3 The concept of single jumpering (not TAM-less) is well understood and uncontroversial. Currently, MPF is double jumpered – this consumes 2 jumpers on the MDF, 3 tie cables and 1 TAM. If MPF was single jumpered it would consume 1 jumper, 1 tie cable and 1 TAM.
- 4 The core question regarding single jumpering is whether it is more efficient in the sense of being lower cost than the current double jumpering arrangements. The potential lower cost can be seen as costs savings or benefits (such as need for less tie cables and frame) offset by additional costs (development costs, underused or unused assets). TalkTalk contend that single jumpering is lower cost and more efficient.
- 5 BT in its submission to Ofcom argue that SJ is not lower cost and that TTG's request for single jumpering 'is not a reasonable request'. This is quite an extraordinary claim:
 - First, in their submission BT make no quantitative assessment of the cost savings and have solely looked at the additional costs. Such a one-eyed analysis is rather pitiful.
 - Second, in assessing the additional costs, BT have ignored the one deployment strategy that would reduce additional costs – namely an expansion-only or growth-only approach. This is even though the expansion-only approach was exactly the approach to SJ that they suggested in 2007. Again such a narrow-minded analysis is woeful.
- 6 In other words they ignored the benefits and exaggerated the costs.

- 7 One might be forgiven for thinking that BT's intention was not to provide an objective analysis of the benefits and costs but rather 'cook' the figures to come out with the answer that suits them. Ofcom should place very little weight on Openreach's submission and particularly the conclusion since Openreach's response is clearly biased.
- 8 Below we present a reasonably balanced analysis of the benefits and costs of single jumpering. It does not look just at the cost savings but also includes the additional costs incurred (thus addressing BT's concerns). Further, it is transparent and open to challenge – an approach that BT shies away from by redacting lots of the assumptions (even though there can be no credible confidentiality justification). We are very willing to engage in discussion of alternative assumptions. We do not claim that it is perfectly correct. However, we do believe that it is broadly correct (and in any case, the conclusion is robust to different assumptions as we demonstrate)
- 9 Initial MPF roll-out in the early 2000s was based on double jumpering. We have no contention with that. However, it became apparent to BT in 2007 (or earlier) that the volume use of MPF meant that using single jumpering (rather than double jumpering) offered potential cost savings (as BT itself stated – see §39 below). If single jumpering were to be introduced there are two dimensions to the approach to introduction: the 'how' and the 'when'.
- 10 The 'how' refers to the deployment / implementation strategy. There are broadly three options (as well as the do nothing option)
- Option A: Force migrate all MPF lines to single jumpering (SJ)
 - Option B: Provision all new connections on SJ
 - Option C: Put only net capacity expansion or growth onto SJ and so leave the number of MPF tie cables / lines double jumpered (DJ) unchanged
 - Option D: Put no lines onto SJ
- 11 The table below illustrates the different options.

		2008	2009	2010	2011	2012	2013
MPF lines							
start of year		0	100	285	442	576	690
gross adds		100	200	200	200	200	200
disconnections	15%	0	-15	-43	-66	-86	-103
end of year		100	285	442	576	690	786
net adds (growth)	✓	100	185	157	134	114	97
<i>Start SJ in 2010</i>							
<i>A. Forced migration</i>							
DJ		100	285	0	0	0	0
SJ		0	0	442	576	690	786
<i>B. New connection</i>							
DJ		100	285	242	206	175	149
SJ		0	0	200	370	515	637
<i>C. Growth/expansion only</i>							
DJ		100	285	285	285	285	285
SJ		0	0	157	291	405	501
<i>D. No SJ</i>							
DJ		100	285	442	576	690	786
SJ		0	0	0	0	0	0

12 Whilst options A and B result in a greater number of lines on SJ (and so greater cost savings) they also result in higher additional costs. In particular:

- Under (A) forced migration, lines would have to be re-jumpered from the DJ configuration to the SJ configuration which costs about £35 per line¹
- Under A and B the estate of 'old' TAM and tie cables that were used for DJ (285 lines in the case above) will be unused / underused. This could be considered a 'stranded asset'

13 The growth/expansion-only option (C) avoids these costs since the existing / old TAM/tie-cable estate used for DJ remains in situ and is used as before². In effect the existing TAM/tie-cable estate is unaffected by the introduction of SJ and it is only lines that cannot be accommodated on the existing estate that are single jumpered. It can be considered as a 'business-as-usual' approach with additional TAM/tie cable capacity being provisioned as needed (but using a SJ configuration rather than a DJ configuration). Expansion-only would also avoid possibility of stranded MSAN ports and outages during forced migration.

14 The 'when' dimension is when to start using single jumpering. Generally the earlier single jumpering is started the more lines are put on single jumpering and so the greater the cost savings.

¹ See for example BT's submission at §3.1.12 and §4.16 (bullet 3)

² Though there will be disconnections of lines from this equipment, new lines will be added to keep the estate equally well used.

- 15 We have developed a simple model that assesses the cost savings and additional costs resulting from using single jumpering. It models all three strategies³ and allows different start years to be used. We have provided to Ofcom the model itself and are very willing to meet with Ofcom to explain the logic and full range of assumptions.
- 16 In developing the model and assumptions we have, where appropriate, reflected the points Openreach has raised (e.g. additional costs) and their assumption (to the degree to which they can be guessed at). This has been quite difficult since Openreach's submission includes very little explanation or numeric assumptions. Openreach estimate the cost of using SJ as £31m to £108m yet there is no cost breakdown in the Openreach submission of this total cost estimate. In any case, this cost figure is of little relevance / reliability – for example:
- The cost is for a new connections strategy and therefore includes additional/stranded capacity
 - Rather oddly, BT's cost estimates include the cost of new TAM ports (in CAPEX terms) but does not consider the reduced number of 'old' TAM ports even though evidently this are decreasingly needed – this is at odds with BT's claims that they have not included stranded TAM costs⁴. Notwithstanding these problems, we understand from Ofcom that the majority of the £31m to £108m cost of additional TAM ports. We assess explicitly and transparently in our model the additional cost of TAM ports required
 - The costs include (we presume) the equipment costs for net growth in lines in the single jumpering scenario but these costs are not included in the counterfactual

- 17 Below we highlight the key assumptions and results for the expansion-only model:

General notes

- The model assesses the overall cost impacts of introducing single jumpering including impact on Openreach and LLUOs (but does not include operational benefits such as lower fault levels)
- Where numbers are referred to below they assume a 2008 start of SJ (unless otherwise stated)
- The year 2011 refers to the FY 2011/12 i.e. starting April 2011

Line volumes

- Historic MPF volumes based on actual volumes to 2010. Projections based on Ofcom forecasts to 2013 (6.7m) and a decline after 2015. Assume that 5% of MPF lines are not used by major MPF LLUOs (i.e. LLUOs except TTG and Sky) and are not moved to SJ

³ for the expansion-only strategy all costs are modelled. For the other strategies stranded assets and migration costs are not modelled

⁴ Openreach submission: "Openreach has also excluded the additional costs of the new and stranded TAM assets." [section 4, bullet 1, dash 3]

- Assumes all net growth in lines (after start year 2008) are put onto a SJ configuration
- In addition it is assumed that 10% of the DJ TAM/tie cable estate is migrated to SJ configuration each year without incurred additional migration/stranded asset costs. This reflects a combination of equipment reaching end of life, introduction of new/better equipment, equipment failure / swap out and/or grooming⁵. In essence when a replacement is required rather than replacing DJ TAM/tie cables with more DJ TAM/tie cables they are replaced with SJ TAM/tie cables. We consider 10% is reasonably conservative since it implies a 10 year life span which is long for this type of equipment
- Assuming a 2008 start this means that by 2013, 5.9m (91% of all lines) will be SJ. If the start was not until 2011, 52% of lines would be DJ by 2013.

Cost savings⁶

- The cost savings resulting from using DJ are £5.80 per line (in 2010):
 - £4.30 per year in frame cost since only one jumper (based on RFS cost for WLR rather than MPF⁷)
 - £1.50 per year in tie cable costs. Rather than three £1 tie cables (two are part of MPF product and one is paid by LLUO) only one tie cable is required for SJ This 'inline' tie cable may be slightly more expensive⁸ and will have lower utilisation. We estimate it costs £1.50. Thus the saving is $3 \times £1 \text{ less } £1.50 = £1.50$
 - We assume no saving in TAM cost though it is possible that the TAM used in a SJ configuration is lower cost
- There are also savings in connection and disconnection costs since only one jumper needs to be installed / de-installed. We estimate this at £6 per connection / disconnection⁹ based on Openreach's connection costs
- Unit costs reduce by 2% nominal per year (i.e. 5% in real terms if RPI 3%), except in period 2010 to 2013 where (according to Ofcom) average price reduction is about -0.7%
- The total cost savings are estimated at £49m in 2013

Additional costs

- There will be lower TAM utilisation under SJ than DJ¹⁰. In a worst case the utilisation on SJ TAMs should be the same/similar to its tie cable utilisation

⁵ Openreach's planned deployment of new CIDD TAMs is an example of replacement (see Openreach submission §3.1.11)

⁶ These include all costs e.g. equipment, engineers, space, resources etc

⁷ see March consultation Fig 8.9

⁸ We are not aware of any reason as to why this need be more expensive

⁹ we have not assumed any cost saving in jumper removal costs

¹⁰ For example, see Openreach submission §4.1.7 "This would have a consequence of significantly reducing TAM utilisation from the current level to [redacted]"

which, for TTG, is [X] or MPF lines. The tie cable utilisation is an appropriate 'worst case' benchmark since under a SJ configuration a TAM will be provisioned whenever a tie cable is provisioned. This is a 'worst case'¹¹ and it is likely that utilisation would be higher:

- If Openreach were to charge for a TAM when the TAM is provisioned (as they do for tie cables¹²) then it will create an incentive for LLUOs to improve utilisation above the [X] level – currently LLUOs leave tie cable unused (e.g. quarantined since unresolved fault on tie cable) since the cost penalty is low £1 per line. However, if the LLUO is charged £5 (£1 for tie cable and £4 for TAM) then the case for being these lines back into use will increase. We would expect to achieve more than 80%
- TTG are mid way through migration and new exchanges. Our utilisation is likely to increase
- Openreach discuss TAM utilisation in their submission (though all the numbers are redacted). When Ofcom considers this submission Ofcom need to be aware that the apposite question in this context is not what BT have achieved in the past or what they achieve today but rather what they are likely to achieve in the future under a SJ configuration compared to a DJ configuration. Thus any numbers provided by BT must be treated with great caution
- We have very conservatively assumed a less than [X] utilisation for the first three years and [X] in year 4 and onwards. This results in an additional 2.1m TAM ports in 2013 at a cost of £8m pa¹³ (compared to DJ scenario where we have assumed a high 95% utilisation figure).
- The other additional costs are:
 - Openreach product/process/systems development and project management (£3.5m¹⁴) and £0.5m per year ongoing management based on Openreach's estimates. We consider these very generous
 - LLUO/CP product/process/system development (£[X]m¹⁵) and £[X]m per year ongoing

¹¹ LEFT BLANK

¹² Currently the TAM cost is recovered when a line is active meaning that LLUOs do not incur a direct cost if a particular TAM port is un-utilised (though the cost of less than 100% utilised TAMs is reflected in the MPF rental charge)

¹³ The annual cost per TAM is £3.99 in 2013/14 – taken from Ofcom presentation on TAMs

¹⁴ Openreach have not provided a separate development cost for SJ-MPF in their submission. It has provided a development cost for TAM-less MPF which is £3.5m and says that "the requirement to initially develop a new product would be the same for either the TAM-less MPF or SJ MPF variants" (§4.1.1). We consider that £3.5m is a conservative figure for the efficient cost. SJ-MPF is likely to be simpler than TAM-less MPF since the complications related to managing the faulting interface are not required. Thus the £3.5m provides a generous figure for product development for SJ-MPF

¹⁵ For TalkTalk the development would cost less than £[X] and we estimate that the same is required for Sky

- Up to 250,000 additional frame capacity is required for a transitional period during the early phase¹⁶. The costs are £16 CAPEX¹⁷ and £1.80 opex per year

Valuation

- The cost savings and additional costs are valued using an NPV in 2011 with a discount rate of 8.8% which is the cost of capital for Openreach / LLU¹⁸. The effect of using this discount rate is that the NPV of costs is the same whether it is treated as a CAPEX figure or annualised (i.e. an annuity)
- 18 The key conclusions are described below – the case that the single jumpering approach is more efficient than double jumpering is strong and clear:
- Under a expansion-only strategy starting in 2008 there is a significant net PV cost saving resulting from using single jumpering of over £310m. Even if SJ were started in 2011 the value would be over £160m.
 - Even if there were some up front or ongoing costs that have not been estimated (such as additional frame capacity in certain exchanges or lower TAM utilisation) or lower migration of DJ estate the value is still strongly positive. For example in a very worst (and implausible) case of 60% TAM utilisation, 5% migration and 2011 start the NPV is about £110m
- 19 It is notable that there are other benefits (which we have not quantified) that result from single jumpering such as: fewer dead-on-arrivals and early life failures, easier diagnosis and lower fault costs (due to fewer points of failure), shortened metallic path / lower line loss (and so higher broadband speeds), shorter outage on migration (see Openreach claims at §39 below). Openreach will also benefit (not quantified) by no longer needing to deploy TAMs in expectation of customer provisioning (slide 2 issue from the 2007 presentation) since they only need to deploy when the tie cable is ordered.

WHAT SHOULD OFCOM ASSUME IN SETTING CHARGES

- 20 The analysis in the previous section demonstrates that for one deployment strategy (expansion-only) there is a significant net cost saving from moving to single

¹⁶ This is shifting forward MDF capacity rather than permanent excess capacity. See Openreach submission §4.1.6 bullet 1 and the first bullet 1 on page 20. A cross-check of this would be to assume that each exchange would need two sets of SJ TAM/tie cables for each operator (i.e. TTG and Sky) rather than one set of DJ TAM/tie cable for all operators (under DJ the TAM/tie cables are shared between operators). Thus one additional set of TAM/tie cables will be required which assuming standard size of 100 will be for 100 lines. In terms of frame capacity this will require 100 jumpers on the frame. Multiplying by 2,000 exchanges used for LLU the additional capacity required on the frame would be for 200,000 lines

¹⁷ This additional cost is effectively recovered (excluding the cost of capital) since the excess capacity will not be required

¹⁸ From WBA Charge Control Statement July 2011

jumpering. This demonstrates that there is a sound case that single jumpering is more efficient. In this section we discuss for the context of the charge control:

- what costs are recoverable in charges?
- what deployment strategy should be considered?
- when it should be assumed single jumpering starts/started?
- what the implications are for charges?

- 21 Though we have highlighted that there may be costs (e.g. re-jumpering, unused assets) involved in the more aggressive forced migration (option A) and new connections (option B) strategies, we consider that for the purposes of setting charges these costs are not relevant. We provide our rationale below.
- 22 Costs used in a charge control should be those which are the efficient forward looking costs. This maximises consumer benefits and welfare since it encourages efficient investment (by sending sound make/buy signals), increases productive and allocative efficiency and ensures more effective competition. Basing costs on what BT happens to do also severely reduces BT's incentive to minimise cost since they will see little or no benefit from reducing costs – if they don't minimise cost they get to recover the excessive costs they incur but if they do minimise costs charges their prices will be reduced.
- 23 Under this approach if BT has incurred costs in the past that are above efficient forward looking costs then they should not be recoverable in wholesale charges¹⁹.
- 24 This approach is supported by Ofcom and (to some degree) BT. For example [emphasis added]:

Ofcom

"Our specific policy objectives in proposing the charge controls for LLU and WLR services are ... to ensure that the delivery of the regulated services is sustainable, in that the prevailing prices provide BT with the opportunity to recover all of its relevant costs (where efficiently incurred), including its cost of capital"²⁰.

"CCA FAC is a suitable cost standard to prevent excessive levels of charges being levied by Openreach. It also ensures that the delivery of regulated services is sustainable by enabling Openreach to recover all relevant and efficiently incurred costs."²¹.

¹⁹ Under an efficient forward looking cost model this is the case whether or not the cost was efficient at the time the investment were made. This concept is sometimes known as a 'fair bet' where the risk that future estimate of efficient costs are lower is reflected in a higher cost of capital

²⁰ Consultation §2.39

²¹ Consultation §3.19

"In general, our preferred approach to setting charges is to base costs on what is believed to be the most efficient available technology. This is sometimes described as the "Modern Equivalent Asset" (MEA) approach to pricing." ²²

"If single jumpering were found to be more efficient for some CPs, then we would expect Openreach to develop such a product, and for CPs to be able to purchase that new MPF product for new connections and to migrate from the existing arrangements, if they wish." ²³

"Ofcom's approach is, as mandated by the EU framework, a forward-looking one which allows only efficiently-incurred costs" ²⁴

"The consistent guidance of the EU institutions has been that, in performing their analysis, Ofcom and other NRAs should adopt a forward-looking analysis and allow only efficiently incurred costs." ²⁵

"Ofcom does, however, expect BT to operate efficiently and allows BT to recover only the costs which an efficient operator would incur to provide the services subject to the control." ²⁶

BT ²⁷

"If ... a more efficient (and feasible) course of action would have led to a lower level of costs, then an adjustment would be required to strip out the proportion of the cost that can be shown to be excessive. This ensures customers are paying a fair and reasonable price and provides strong incentives for companies to invest efficiently."

"As Professor Yarrow's assessment of the core objectives and principles of RPI – X regulation explains, shareholders should bear the inefficient level of costs that they can be shown to be responsible for ..."

- 25 The concept of efficient forward looking costs can be conceived of as the costs of a new entrant in a competitive market. Imagine an alternative provider of MPF rental services who was new to the market. They would engineer their network (and jumpering approach) in the most efficient way unencumbered with the legacy of any previous approach to jumpering or an existing base of equipment. It is obvious that a new entrant would deploy SJ for all lines (as BT did for its new 21CN).
- 26 Another way in which efficient forward looking costs can be conceived is to assess the incremental cost that would be incurred for additional demand. The efficient way to satisfy additional demand is SJ.

²² Consultation §3.21

²³ Consultation §8.49

²⁴ BT WBA Appeal Ofcom Defence §1.2

²⁵ BT WBA Appeal Ofcom Defence §47

²⁶ BT WBA Appeal Ofcom Witness Statement (Culham I) §25

²⁷ §39 and §53 of Witness Statement by Felipe Florez-Duncan, Senior Regulatory Economist, BT. This was part of BT's appeal of the July 2011 WBA Charge Control decision.

- 27 Under a efficient forward looking approach to assessing costs, stranded assets costs would not be recoverable since they are not efficient forward looking costs nor are they costs a new entrant would incur.
- 28 BT may argue that basing costs on a new entrant's costs is inappropriate, and that costs should instead be based on those of '*an efficient operator in BT's position*'²⁸. They may argue that this position is consistent with the Competition Commission's decision in the 2009 LLU/WLR Charge Control appeal (Case 1149/3/3/09 – WLR Determination) at §3.75ff.
- 29 However, this approach mischaracterises the Competition Commission's approach. The Competition Commission argued that the price of a new entrant would be determined by the costs of BT if (and only if) BT's costs were lower than the costs of a new entrant. However this is not the case here.
- 30 In the 2009 LLU/WLR appeal CPW (TTG's parent at the time) had argued that WLR costs should be based on those of a new entrant which – in that case – would have been higher than the costs that BT was incurring to provide WLR. The CC rejected that submission, noting (inter alia) at §3.78:

"We do not accept that the appropriate cost benchmark is determined by the costs of a new entrant. In particular, the implication of CPW's argument is that in competitive markets the price is determined solely by the potential competition from new entrants. We do not accept this. In a competitive market the constraints may be from potential competition, from new entrants and/or from actual competition among incumbents. In addition, to set the price controls, as CPW suggested, that would allow efficient new entrants to be able profitably to provide voice services would not be in the interests of consumers if this would result in a higher price than would be the case were it determined by reference to costs of the existing operators."

- 31 Therefore, the Competition Commission's approach of using BT's costs in that case does not undermine at all the case for using new entrants' costs as the price benchmark where those new entrant costs are lower than those of the incumbent (which is the case here). It is the lower costs level that will typically set the price in a competitive market.
- 32 Ofcom appears to agree with this i.e. that in the case where BT's costs are higher than those of an efficient entrant (as is the case here) that prices should be based on the costs of the new entrant:

The CC made its statement in circumstances where BT's costs were lower than those of the entrant who was the appellant in that case, (TalkTalk Telecom Group – TTG). TTG was arguing that prices should be higher than Ofcom had set them, to reflect TTG's own higher costs. The CC rejected TTG's argument. In my view, it was

²⁸ This is the approach they took in their challenge in the WBA charge control where they argued that their pension deficit costs should be recoverable since the appropriate costs should not be those of an efficient operator but an operator in BT's position. See BT WBA Appeal Notice of Appeal §§182-183.

*correct, in those circumstances, to identify the relevant costs as those of an operator in BT's position, since, in a competitive market, price will be driven to the lower of the costs of the entrants and the incumbent. In the present appeal, BT argues that its costs are above those of an efficient entrant because of its need to make PDRs. But this means that BT's costs are not the relevant ones in this case, since competition always selects the lower of two cost levels and in this case (other things being equal) the lower costs are those of the entrant which does not make PDRs.*²⁹

33 Therefore, we consider in this case that the price of MPF should be based on the efficient forward looking costs which are effectively the costs of a new entrant and not of an 'efficient operator in BT's position'. This implies that the recoverable costs must exclude those costs that BT might incur but that a new entrant would not incur. In particular, it should exclude:

- The costs of transitioning (in a forced migration) lines from a DJ configuration to a SJ configuration e.g. re-jumpering
- The costs of additional transitional frame/MDF capacity that will be required for a temporary period³⁰
- The costs of unused (or stranded) assets that might result from, for example:
 - Unused TAMs and tie cable that have been set up for a (now redundant) DJ configuration³¹.
 - Frame capacity that is not now required due to reduced use of the MDF frame by MPF even if it were efficient in the past (which it anyway was not)

This is consistent with treatment of other stranded assets – for example, when assets become unused (such as line cards or DSLAM equipment) they are not (or should not) be allowed to be recovered.

- The cost of lower utilisation of TAMs under a SJ arrangement should be included since this cost would be incurred by a new entrant

34 It is worth reflecting on the particular case of the MDF / frame where due to SJ less frame resource will be required and there is a risk of unused assets (this has been suggested as an issue). It would be a perversion of economic regulation (and in our view inconsistent with Ofcom's duties) if MPF lines were required to continue to use double the frame capacity in order to avoid frame capacity going unused. If there were a concern (wholly misplaced in our view) that it was inappropriate for BT to shoulder the cost of unused MDF capacity (and so this cost should be recoverable)

²⁹ BT WBA Appeal Ofcom Witness Statement (Culham I) §106

³⁰ See Openreach submission §4.1.6 bullet 1 and the first bullet 1 on page 20

³¹ We note in any case that TAMs (and possibly some tie cables) used in a DJ configuration can be redeployed in a SJ configuration and/or resold

then the cost should be spread across all users of the MDF (or possibly a wider base) and not just MPF lines³².

35 Thus in summary we consider that transition costs and unused/stranded assets costs are not relevant to the costs that Ofcom should properly include in its assessment of BT's costs since they are not efficient forward looking costs or costs of a new entrant.

36 The second issue that Ofcom may need to consider in setting charges is one of timing³³ – in assessing recoverable costs in 2013/14, what is the appropriate assumption for when SJ started to be deployed. Obviously the earlier SJ starts the more lines will be SJ (rather than DJ) and so MPF costs in 2013/14 would be lower. We consider that it is appropriate to assume that SJ started in 2008 or earlier. We explain our rationale below.

37 The correct question in determining when to assume BT started is not what BT actually did but what BT (if it were acting properly) might reasonably have done. This difference is particularly critical since BT has strong incentives to not act efficiently. This is because deploying SJ for MPF:

- risks stranded assets (that cannot be recovered in charges)
- limits ability to 'milk' existing assets
- prejudices WLR (which Openreach prefer over MPF)
- disadvantages BT Retail (who use WLR)

BT's incentive to act inefficiently is reinforced by Ofcom's approach of not setting charges based on efficient forward looking cost levels.

38 In considering what BT might have reasonably done the following points are apposite:

39 First and most critically, in July 2007 Openreach presented a document³⁴ to LLU operators which explained that Openreach saw significant net benefits for MPF to be engineered using single jumpering (due to *inter-alia* fewer jumpers / MDF use). Openreach proposed an expansion-only approach for deploying SJ. In BT's own words the benefits and costs were (pages 13 and 14):

Benefits

- Improves Right First Time (only one jumper)
- Improves cycle time (eliminates TAM capacity problems)
- Reduces DOAs & Early life failures

³² To be clear we do not consider that unused capacity should be recoverable in charges

³³ If one takes the view that only efficient forward looking cost should be included in costs estimates for 2013/14 then it would be irrelevant when SJ started since one would assume that 100% of lines were SJ

³⁴ This document has been sent to Ofcom. We note that this document is not labelled confidential

- Reduces outage time during a migration as only one jumper needs to be installed
- Shortens the metallic path between end-user and DSLAM – lower loss.
- Customer has sole use of the 100 port TASM as part of own tie cable.
- Reduces the amount of MDF capacity used.
- A 100% solution would simplify the CCD fulfilment process
- Can co-exist with current LLU TAM architecture.

Costs

- Increases the complexity of existing systems and processes
- The P&B process will not be automated on EMP but associated data build must be supported (non-trivial)
- Needs CP support
- Will entail increased consumption of physical TAM port hardware.
- Openreach needs ability to selectively deploy as must be sure that MPF volume justifies the cost of dedicated TAM ports hard-wired into a customer tie cable.

40 Pages 6 and 7 outline the scenarios in which it was appropriate to use single jumper. This effectively says that where expansion in TAM / tie cables is required it is best to use SJ but in other scenarios it would be inappropriate. In other words they were advocating an expansion-only approach.

41 We understand that Openreach did not pursue deploying SJ following this initiative in 2007 since it required CP support which was not forthcoming. The lack of support is not surprising since BT were not offering to share any of the cost saving benefits with LLUOs through lower MPF rental or MPF connection prices yet CPs would incur some higher costs (e.g. more expensive tie cable). As Openreach made clear there would be no MPF price reduction resulting from the introduction of this e.g.

"We continue to use our current Prices to cover both Traditional and in-line TAM"
[page 8]

"We can only have one set of MPF prices ... No price changes" [page 11]

42 The conclusion we believe that can be taken from this are:

- First, Openreach were well aware in 2007 or earlier that SJ could reduce costs and was more efficient under, at least, an expansion-only strategy
- Second, that though CPs did not support the introduction of SJ this is of no relevance since Openreach were not offering to share the benefits of SJ

43 Second, BT has used single jumpering where it has rolled out 21CN where it needed an MPF like product for its own use. For the 21CN roll-out (as originally planned) BT needed a configuration to connect from the MDF to its MSAN to provide voice and broadband services. This needed a TAM. This situation is exactly the same as is

need for an LLUO using MPF. In the case of 21CN, BT chose a single jumper configuration not double jumpering. It started deploying SJ in 2007 (so we can presume that they were aware that SJ was more efficient in 2006 or earlier). Mr Dolling of BT said³⁵:

Since 2007, BT has rolled out EvoTAM3 capability to all of its exchanges that have been upgraded for 21CN, and it is only in these exchanges that a single jumper option is available

- 44 This evidence shows that BT itself considers that SJ is more efficient (at least for expansion) – else there would have been no reason for BT to use it themselves. It has been suggested that the 21CN context is different to the case of LLUOs using MPF since BT was starting with no existing base. That might be relevant if a forced migration strategy were being considered for LLUOs, However, in an expansion-only strategy the approach used for 21CN is fully relevant.
- 45 Third, BT used single jumpering for WLR. Any efficiently acting company would look to review engineering and cost differences between products.
- 46 Fourth, the obligation for BT to act efficiently (and/or for charges to be based on efficient costs) is not contingent on being told to be efficient or being told how to be efficient by its customers (or the regulator). In particular, it is not necessary for customers to submit to BT an SOR.
- 47 BT is trying to suggest that it is only recently that single jumpering has been an issue – for example Table 1 in their submission (titled Timeline of events) start in October 2010 when TTG submitted an SOR. This is wrong for two reasons. First, BT were made aware of the concern over double jumpering in CPW’s 2009 appeal of the LLU Decision and BT itself were well aware of the benefits of SJ in 2007 (as explained above). Second, and in any event, BT obligation to act efficiently (or for prices to be set based on efficient costs) is not one that can be contingent on customers telling it how to be efficient.
- 48 It is worth considering what would happen if the policy to setting costs was one where customers had to tell BT how to be more efficient else prices were set at an inefficient level. If BT were so motivated to act inefficiently (as they clearly are in this case) BT could simply prevaricate and delay any acceptance of the alternative efficient approach knowing that until they had accepted the efficient approach their prices would be based on inefficient practice. Such a model would be a recipe for BT to be able to be inefficient with impunity since the worse that could happen is that it is required to act efficiently after years of delay and it is not punished (and consumers suffer) for the years when it acted inefficiently. That would clearly be against the interests of consumers and is inconsistent with Ofcom’s duties.
- 49 Based on the points made above we consider that there are two plausible approaches to assessing what costs should be recoverable by BT and how SJ should be reflected in the costs estimates for 2013/14.

³⁵ LLU Appeal Witness Statement Dolling §13

50 One approach is to assume that prices should be based on efficient forward looking costs irrespective of what BT has done in the past or its existing estate in situ – it appears to us that Ofcom itself supports this approach. Efficient forward looking costs are effectively those of a new entrant. A new entrant would use 100% SJ and would not incur migration or stranded asset costs. Thus under this model the efficient forward looking costs that should be included in the charge should be use of SJ in 100% of cases with transition and stranded assets being ignored. In this case the MPF rental cost adjustment (versus double jumpering) for single jumpering should be about £4.30:

- Cost saving in MDF, tie cables, TAM = £5.72
- Cost of lower TAM utilisation = £1.43
- Net saving from SJ (versus DJ) = £4.29

51 An alternative approach is to take into account that BT started with DJ on MPF and assume that they would launch SJ using an expansion-only strategy which would eliminate all or most stranded assets and migration costs. This approach does not rely on the efficient forward looking approach to assessing cost. In this case, Ofcom would need to make an assumption of when BT should have reasonably begun to start deploying SJ. We consider a conservative assumption is 2008 since as described above it was more efficient to start introducing SJ (under an expansion-only approach) in 2008 or before and BT/Openreach were well aware in 2007 or earlier of the superior efficiency of SJ. In this case the reduction in costs in 2013/14 is £3.63 (based on the model).

52 These two approaches indicate that the appropriate adjustment to MPF rental costs in 2013/14 is around £4.00. In addition, MPF connection costs should be reduced by about £6 since the 'ending' configuration requires less jumpering – see LLU Charge Control Second Consultation (Nov 2011) §§2.47-2.48. Also all connection costs for other products since migrations from MPF will be lower cost since fewer jumpers in the 'starting/existing configuration' have to be disconnected.

53 These corrections to 2013/14 (using the BT started in 2008 model) costs translate into substantial wholesale price reductions totalling £50m in 2013/14. Across the whole charge control the reduction will be around £100m (given glidepath). This change will also have a similar sized effect on the next charge control. By any measure the impact is material.

54 We consider the more appropriate approach to be the one using efficient forward looking costs since it is consistent with economic principles.

OTHER ISSUES

55 A number of other issues have been raised – these have been highlighted below:

56 Complexity: Openreach argue that there will be more complexity if SJ is introduced. Though there will be some we do not consider that this is particularly troublesome.

First there is already some complexity e.g. with lines being migrated between MPF, SMPF, WLR (and previously WLR2) and GEA and a complex mix of new line provides, stopped line restarts, WLTO and migrations. Second, the added complexity is reflected in the cost to manage the additional product variant (both upfront and ongoing).

- 57 As a more general point we note that all new product introductions involve some complexity and issues that need to be worked through. However, these are not insuperable and the mere existence of them provides no reason to discount the initiative from the off.
- 58 Incentives for TAM utilisation: Openreach has argued that there will be poor incentives to ensure high TAM utilisation. This is not a relevant point.
- First, since under a SJ configuration the TAM is wired into the tie cable ordered and provisioned for each customer the worst that would happen would be that the utilisation is the same as tie cables (over [X] in TTG's case)
 - Second, Openreach could charge the TAM based on TAMs provisioned rather than on active MPF lines which would ensure that Openreach were not exposed to low TAM utilisation and there were incentives for LLUOs to improve TAM / tie cable utilisation
 - Third, and in any case, a lower utilisation is factored in and still it is more efficient to use SJ
- 59 Incentives for CPs to migrate to SJ: Openreach has argued (and Ofcom has echoed the point in its first consultation) that there will be poor incentives for CPs to migrate to using SJ-MPF if there were only one MPF price.
- 60 We recognise that setting a *single* MPF rental price (based on single jumpering costs) for all MPF lines whether single or double jumpered may create some concerns (Consultation §8.47). We understand from Ofcom that the potential problem would be that there may be no incentive (or a disincentive) for CPs to move to use of single jumpering connections since (a) the MPF rental price is the same irrespective of the jumpering method they (opt to) use and (b) there might be a slightly higher cost to CPs from using single jumpering since the tie cable cost will be higher³⁶. We do not, as Ofcom suggest, think these distortions will be 'significant' (§8.47) – Ofcom has provided no evidence for its claim. We suspect that this claim is probably BT's unsubstantiated view.
- 61 Frankly, the existence of this difficulty is a problem of BT's own making and it is for BT to resolve. If BT had acted efficiently in 2007 then this problem would not have arisen. Resolving this problem is in effect part of the 'penalty' for not acting efficiently when it should have. BT should feel the full impact of this penalty so that it is properly disincentivised from acting inefficiently in the future.

³⁶ This is due to two factors. First, single jumpering will require a slightly more expensive evoTAM tie cable (that CPs need to purchase). Second, splitting lines across two sets of tie cables will reduce utilisation and marginally increase cost.

- 62 Notwithstanding that it is BT's responsibility to bear this cost and/or resolve this problem we imagine that pricing could be used to incentivise certain behaviour – for example, lower connection charges to connect to single jumper MPF, equalising the prices of the tie cable used for DJ and those used for single jumpering and/or refunding for under utilised tie cables could all be used to create the right incentives.

TAM-LESS MPF

- 63 The concept of a TAMless MPF is fairly simple. It is SJ MPF without the TAM (the TAM is the test access matrix which is part of BT's equipment that it uses to test lines). The equipment used in TAMless MPF and how it compares is as follows:
- DJ-MPF: 2 jumpers, 3 tie cables, 1 TAM
 - SJ-MPF: 1 jumper, 1 tie cable, 1 TAM
 - TAMless MPF: 1 jumper, 1 tie cable, 0 TAM
- 64 TAMless MPF can be used where line testing is provided by the LLU operator using testing equipment of their own. In TalkTalk's case, TalkTalk have line test equipment connected to its own MSANs. [§<]. TAMless is basically the same configuration as for WLR where the testing (test access) is part of the PSTN equipment.
- 65 The benefit of using TAMless MPF is clear – there is no need for TAMs. The cost saving of TAMless MPF are as follows (based on efficient forward looking costs):
- ~£8 per line compared to DJ-MPF (£4.30 saving in TAM and £4 in frame)
 - ~£5.70 per line compared to SJ-MPF (£5.70 saving on TAM) – the TAM cost saving is higher since the TAM utilisation is lower under SJ [see §50 above]
- 66 It is notable that TAMless MPF eliminates the major additional cost that results from moving to SJ from DJ i.e. low TAMs utilisation.
- 67 The potential gross cost saving is significant given there are forecast to be about 6 million MPF lines. The saving is potentially about £50m per year compared to DJ-MPF and £30m compared to SJ-MPF if all lines used TAMless MPF. Even if only half MPF lines were migrated the cost saving is still huge.
- 68 There are a number of additional costs involved in TAMless MPF most particularly
- LLUOs need their own test capability. [§<]
 - Openreach product/process/systems development and project management (£3.5m) and £0.5m per year ongoing management based on Openreach's estimates. We consider these generous
 - LLUO/CP product/process/system development and integration with Openreach's systems
 - Building systems that allow BT to test the line both proactively and reactively (through the LLUO's test equipment)

- There are certain other developments that will be required – for example, to allow Openreach to test a stopped line (that was previously provided over TAMless MPF), T2R fault closure, L2C order closure though none of these are insurmountable and the costs are within the £3.5m figure

69 Even taking a very conservative case the net benefit is significant

- only TalkTalk uses TAMless MPF
- expansion-only strategy
- [X]
- [X]
- [X]
- net present value is over £20m

70 If one considers that Openreach could have begun this development far earlier and/or that some of the existing estate that includes TAMs can be replaced and migrated each year then the value is £50m to £100m and thus the case is even stronger.

71 Thus we consider that there is a strong case for TAMless MPF.